

1        This listing of claims replaces all prior versions and listings:

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3        **Listing of Claims:**

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5        1. (original) A computer program product encoding a computer  
6 program for executing on a computer system a computer process for simulating  
7 performance of a software system including one or more resources, the computer  
8 process comprising:

9                    generating one or more workload definition sequences defining the  
10 software system, each workload definition sequence including a plurality of  
11 workload request nodes, the workload definition sequence including at least two of  
12 the workload request nodes having a sequential relationship relative to different  
13 simulation intervals;

14                    receiving the workload definition sequence into an evaluation engine; and  
15                    evaluating the one or more workload definition sequences to simulate the  
16 performance of the software system.

17

18        2. (original) The computer program product of claim 1 wherein each  
19 request node is defined independently of a specific hardware model instance.

20

21        3. (original) The computer program product of claim 1 wherein each  
22 workload request node defines a transaction associated with a resource in the  
23 software system.

1       4. (original) The computer program product of claim 1 wherein each  
2 workload request node represents one or more component events associated with a  
3 resource in the software system,

4  
5       5. (original) The computer program product of claim 1 wherein the one  
6 or more workload sequences are generated prior to the receiving and evaluating  
7 operations and substantially define all workload request nodes for simulating  
8 performance of the software system.

9  
10      6. (original) The computer program product of claim 1 wherein each  
11 workload request node defines a device option characterizing constraints on how  
12 the workload request node may be assigned to a resource in the software system.

13      7. (original) The computer program product of claim 1 wherein at least  
14 one workload sequence includes a fork node defining a split of one workload  
15 sequence branch into a plurality of workload sequence branches.

16      8. (original) The computer program product of claim 1 wherein at least  
17 one workload sequence includes a join node defining a combination of a plurality  
18 of workload sequence branches into a single workload sequence branch.

19  
20      9. (original) The computer program product of claim 1 wherein the  
21 computer process further comprises:

22            receiving at least one of a monitoring trace, statistical data, and a workload  
23 specification to generate the one or more workload definition sequences.

1           10. (original) The computer program product of claim 1 wherein the  
2 operation of receiving at least one of a monitoring trace, statistical data, and a  
3 workload specification comprises:

4           receiving the monitoring trace defining a sequence of software system  
5 requests relating to an application request associated with the application.

6           11. (original) The computer program product of claim 1 wherein the  
7 operation of receiving at least one of a monitoring trace, statistical data, and a  
8 workload specification comprises:

9           receiving the statistical data defining a statistical distribution of one or  
10 more application requests associated with the application.

11           12. (original) The computer program product of claim 1 wherein the  
12 operation of receiving at least one of a monitoring trace, statistical data, and a  
13 workload specification comprises:

14           receiving the workload specification defining a set of resource request  
15 descriptions associated with the software system.

16           13. (original) The computer program product of claim 1 wherein each  
17 workload definition sequence comprises a start node associated with a start time,  
18 and the simulating operation comprises:

19           activating at least one of the workload definition sequences, if the start time  
20 associated with the start node of the workload definition sequence satisfies the  
21 simulation interval value.

1           14. (original) The computer program product of claim 1 wherein the  
2 simulation operation comprises:

3           translating at least one of the workload request nodes into one or more  
4 component events recorded in an event queue.

5  
6           15. (original) The computer program product of claim 14 wherein the  
7 evaluating operation comprises:

8           scheduling each component event with an instance of a hardware model  
9 associated with a resource in the software system.

10  
11           16. (original) The computer program product of claim 14 wherein the  
12 evaluating operation comprises:

13           scheduling, based on a scheduling policy, each component event with an  
14 instance of a hardware model associated with a resource in the software system.

15  
16           17. (original) The computer program product of claim 14 where the  
17 evaluating operation further comprises:

18           receiving one of the component events from the event queue;  
19           identifying a resource associated with the component event;  
20           scheduling the component event with an instance of a hardware model  
21 associated with the resource in the software system; and  
22           simulating the component event using the instance of the hardware model.

1           **18.**    (original) A performance simulation system for simulating  
2    performance of a software system, the performance simulation system comprising:  
3            a workload generator generating one or more workload definition  
4    sequences defining the software system, each workload definition sequence  
5    including a plurality of workload request nodes, the workload definition sequence  
6    including at least two of the workload request nodes having a sequential  
7    relationship relative to different simulation intervals; and  
8            an evaluation engine receiving the one or more workload simulation  
9    sequences and evaluating the one or more workload definition sequences to  
10   simulate the performance of the software system.

11  
12           **19.**    (original) The performance simulation system of claim 18 wherein  
13    each workload request node defines a transaction associated with a resource in the  
14    software system.

15  
16           **20.**    (original) The performance simulation system of claim 18 wherein  
17    each workload request node represents one or more component events associated  
18    with a resource in the software system.

19  
20           **21.**    (original) The performance simulation system of claim 18 wherein  
21    each workload request node defines a device option characterizing constraints on  
22    how the workload request node may be assigned to a resource in the software  
23    system.

1           22. (original) The performance simulation system of claim 18 wherein  
2 at least one workload sequence includes a fork node defining a split of one  
3 workload sequence branch into a plurality of workload sequence branches.

4  
5           23. (original) The performance simulation system of claim 18 wherein  
6 at least one workload sequence includes a join node defining a combination of a  
7 plurality of workload sequence branches into a single workload sequence branch.

8  
9           24. (original) The performance simulation system of claim 18 wherein  
10 each workload definition sequence comprises a start node associated with a start  
11 time, and the evaluation engine comprises:

12           a simulation clock incrementing a simulation interval value; and  
13           an activator activating one of the workload definition sequences, if the start  
14 time associated with the start node of the workload definition sequence satisfies  
15 the simulation interval value.

16           25. (original) The performance simulation system of claim 18 wherein  
17 the evaluation engine comprises a sequence processor translating at least one of  
18 the workload request nodes into one or more component events.

19           26. (original) The performance simulation system of claim 25 wherein  
20 the evaluation engine comprises:

21           an event queue receiving the component events from the sequence  
22 processor.

1           **27.** (original) The performance simulation system of claim 25 wherein  
2 the evaluation engine further comprises a scheduler module assigning each  
3 component event to an instance of a hardware model representing a resource in the  
4 software system.

5  
6           **28.** (original) The performance simulation system of claim 27 wherein  
7 the scheduler module has access to a scheduling policy governing an assignment  
8 of a component event to an instance of a hardware model by the scheduler module.

9  
10          **29.** (original) The performance simulation system of claim 18 wherein  
11 the evaluation engine comprises a simulator determining a duration of a  
12 component event assigning to an instance of a hardware model.

13          **30.** (original) A method of simulating performance of a software  
14 system including one or more resources, the method comprising:  
15           generating one or more workload definition sequences defining the  
16 software system, each workload definition sequence including a plurality of  
17 workload request nodes, the workload definition sequence including at least two of  
18 the workload request nodes having a sequential relationship relative to different  
19 simulation intervals;

20           receiving the workload definition sequence into an evaluation engine; and  
21           evaluating the one or more workload definition sequences to simulate the  
22 performance of the software system.

23  
24          **31.** (original) The method of claim 30 wherein each request node is  
25 defined independently of a specific hardware model instance.

1       32. (original) The method of claim 30 wherein each workload request  
2 node defines a transaction associated with a resource in the software system.

3       33. (original) The method of claim 30 wherein each workload request  
4 node represents one or more component events associated with a resource in the  
5 software system,

6       34. (original) The method of claim 30 wherein the one or more  
7 workload sequences are generated prior to the receiving and evaluating operations  
8 and substantially define all workload request nodes for simulating performance of  
9 the software system.

10      35. (original) The method of claim 30 wherein each workload  
11 definition sequence comprises a start node associated with a start time, and the  
12 simulating operation comprises:

13       activating at least one of the workload definition sequences, if the start time  
14 associated with the start node of the workload definition sequence satisfies the  
15 simulation interval value.

16      36. (original) The method of claim 30 wherein the simulation  
17 operation comprises:

18       translating at least one of the workload request nodes into one or more  
19 component events recorded in an event queue.

1       37. (original) The method of claim 36 wherein the evaluating operation  
2 comprises:

3           scheduling each component event with an instance of a hardware model  
4 associated with a resource in the software system.

5       38. (original) The method of claim 36 wherein the evaluating operation  
6 comprises:

7           scheduling, based on a scheduling policy, each component event with an  
8 instance of a hardware model associated with a resource in the software system.

9       39. (original) The method of claim 36 where the evaluating operation  
10 further comprises:

11           receiving one of the component events from the event queue;  
12           identifying a resource associated with the component event;  
13           scheduling the component event with an instance of a hardware model  
14 associated with the resource in the software system; and  
15           simulating the component event using the instance of the hardware model.